Rent or buy a pilot plant

for dairy, plant-based, and new food applications

Application

Tetra Pak Filtration Solutions offers four different types of easy-to-use pilot plants.

Pilot plants are ideal for developing new products, for testing process parameter adjustments, new concentration levels and different membrane types, and for making product samples to be used in consumer tests.

You can test all filtration processes, such as concentration and/or separation, including diafiltration and bacteria and spore removal. In addition, almost any application can be tested, including:

- milk and fermented milk
- sweet and acid whey
- condensate
- cheese brine
- coconut water
- rapeseed, grains, nuts, rice, soy
- pea, potato juice and other vegetable liquids
- fermented broth
- and many others

You can perform the tests on your own raw materials, with your own staff, and your own packaging options. This ensures valid small-scale testing results, which can easily be converted into industrial scale production.

Pilot plant types

We offer four different types of pilot plant for rental or purchase:

- Combined RO/NF/UF/MF spiral-wound plant available with 2.5”, 4” and 6” housings
- MF ceramic plant available with single channel element and housings with either three or seven elements
- UF ceramic and RO spiral-wound plants in three-loop design
- Ultrafiltration plate and frame plant

Smooth and simple operation

Pilot plant design is simple, ensuring easy operation by anyone. The plants are equipped with swing bends for retentate and permeate and a fixed connection for the feed product. It is also possible to make either hose or pipe connections for all four plant designs, if required.

The pilot plants are equipped with a feed pump, a loop pump for recirculation and a small balance tank for collection of either permeate or retentate.

All process data is collected and can be extracted via a USB as a CSV file.

The pilot plants must be cleaned only with standard membrane filtration detergents added manually to the balance tank.

Additional functions, such as automatic CIP dosing and a separate prefilter, are available for purchase.

The ceramic pilot plant for microfiltration is designed for semi-automatic operation and is flexible with regard to pore size.

Utility requirements

The pilot plants require supplies of compressed air, steam, water, power, and possibly chilled water. The pilot plant lessee or owner is responsible for connecting the plant to the necessary utilities and product pipes.

How you get started

- A service engineer will train your staff for one or two days to familiarize them with the plant's features and the scope for adjusting process parameters.
- Membranes will be delivered together with the pilot plant.
- Thorough plant cleaning instructions are provided.

Design and space requirements

All plants are equipped with clamp connections for easy connection of hygienic pipes to all product and service equipment. Flow meters and regulators provide easy control of the flow to and from the plant, the concentration factor, and the plant temperature.

Always follow chemical suppliers' instructions, and use personal protection equipment when handling chemicals.

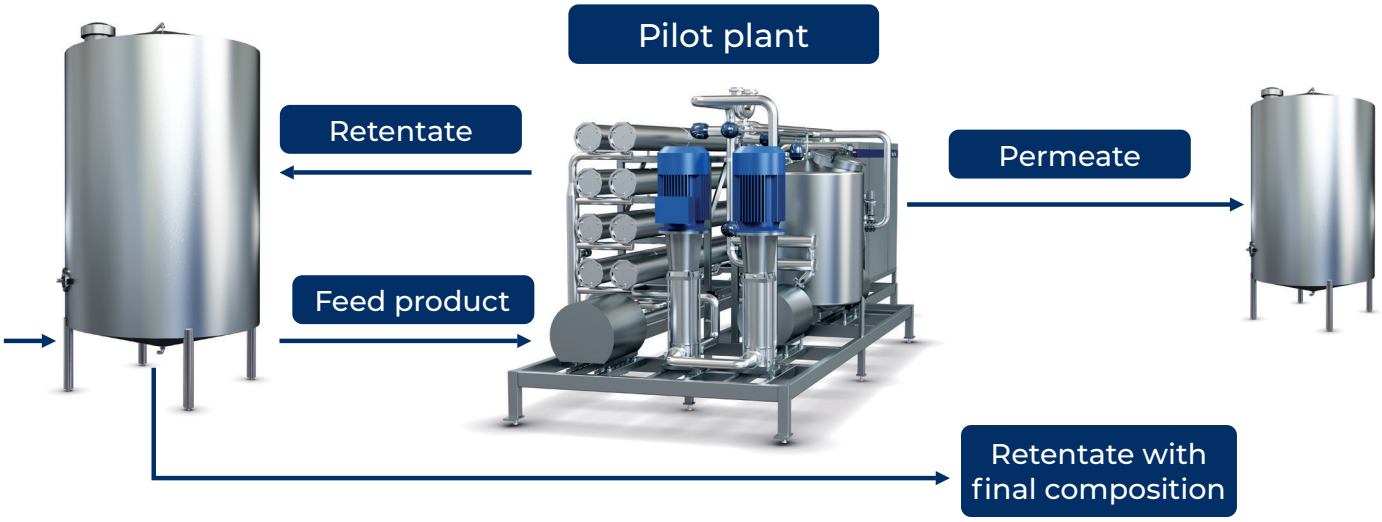
System	Spiral-wound Pilot Plant, Multi-purpose 60 bar	Spiral-wound Pilot Plant, Multi-purpose 40 bar	Plate and Frame Pilot Plant, Ultrafiltration	Ceramic Pilot Plant, Multi-purpose
Automation mode	Batch, optional continuous	Batch, optional continuous	Batch, optional continuous	Batch, optional continuous
Automation	Semi-automatic	Semi-automatic	Semi-automatic	Semi-automatic
Membrane type	RO, NF, UF, MF	RO, NF, UF, MF	Flat Sheet	Ceramic with UTP or GP
Feed capacity	60 - 10, 600 l/h	600 - 1 500 l/h	100 - 300 l/h	68 - 1 225 l/h
Hold-up volume	130 - 200 l	150 l	110 l	170 l
Pressure range	1 - 60 bar	1 - 40 Bar	1 - 10 Bar	1 - 5 Bar
Centrifugal pump	Pressure pump	Pressure pump	Pressure pump	Pressure pump
Pressure source	Circulation pump	Circulation pump	Circulation pump	Circulation pump
Heat exchanger	Multitube on/off valve	Multitube on/off valve	Multitube on/off valve	Multitube on/off valve
Auto diafiltration	Optional with DF pump	NO	NO	Optional with DF pump
Data logging	USB - CSV file	USB - CSV file	USB - CSV file	USB - CSV file
Length, mm	3 361	2 640	2 788	1 850
Width, mm	1 450	1 250	1 169	1 450
Height, mm	2 200	1 940	1 950	2 553

Batch or continuous production

Depending on the application, the pilot plant can run batch or continuous production.

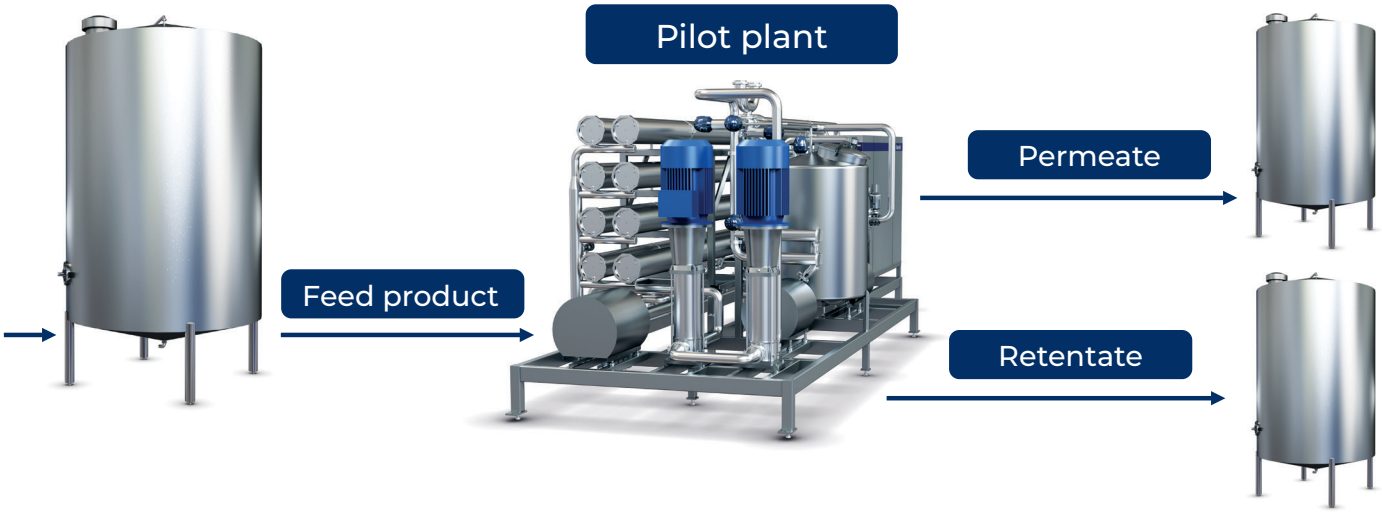
Batch production

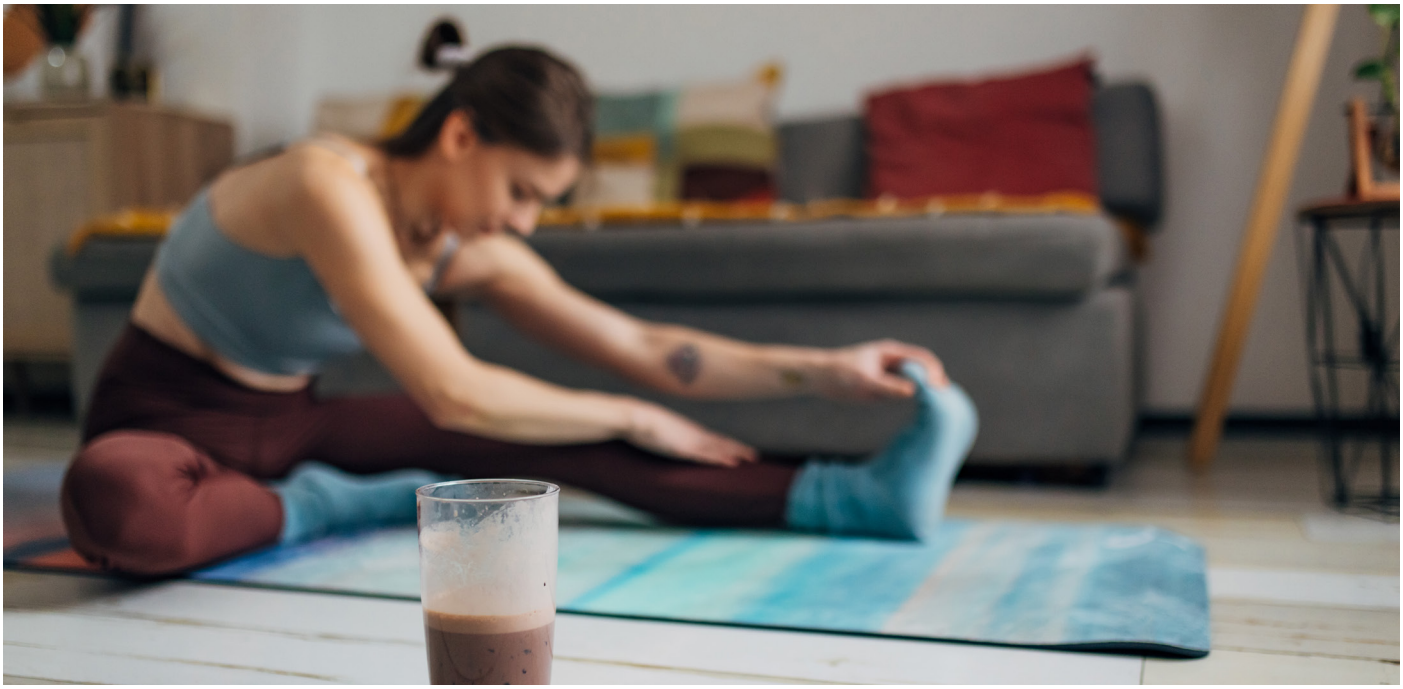
In batch production, you start with a full feed tank and end up with a smaller content in the tank, which is now concentrated. Permeate can be collected in a tank or go to drain.

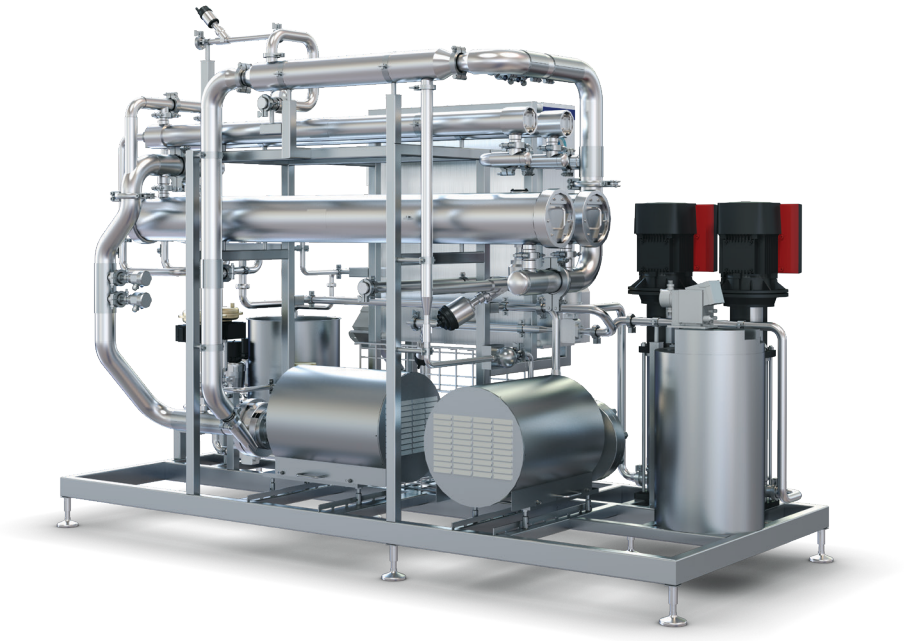


Continuous membrane filtration system

The product comes from a feed tank and is split into retentate and permeate in the pilot plant.
These streams can be collected in tanks if needed.







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